IN THE CLAIMS

The following will replace all prior versions, and listings, of the claims in this application:

1. (Currently Amended) An optical monitoring system for monitoring thin film deposition on a substrate, said system comprising:

a support [[bridge]] configured to be attached on an inside of a deposition chamber;

a first fiber optic collimator coupled to said support [[bridge]];

a first fiber for incoming light coupled to said first fiber optic collimator; and

a second fiber for outgoing light optically coupled to said first fiber optic collimator.

2. (Original) The optical monitoring system of claim 1, further comprising:

a substrate holder configured to hold the substrate; and

a first shutter that prevents incoming deposition material from contacting at least a first portion of the substrate.

3. (Original) The optical monitoring system of claim 1, wherein said first fiber optic collimator comprises a two-fiber ferule that is coupled to said first fiber and said second fiber, wherein said second fiber transmits reflected light.

4. (Original) The optical monitoring system of claim 1, further comprising:

a second fiber optic collimator coupled to said second fiber, wherein said second fiber transmits transmitted light.

5. (Original) The optical monitoring system of claim 1, further comprising:

a second fiber optic collimator coupled to said second fiber, wherein said second fiber transmits reflected light.

6. (Original) The optical monitoring system of claim 1, wherein said first fiber optic collimator comprises a GRIN lens.

7. (Original) The optical monitoring system of claim 6, wherein said first fiber optic collimator comprises a tap optical filter and an alignment glass rod.

8. (Original) The optical monitoring system of claim 1, wherein the substrate comprises a monitored area that is monitored by collimated light from said first fiber optic collimator.

9. (Currently Amended) The optical monitoring system of claim 1, further comprising:
a strobe signal generator ~~coupled to said support bridge~~.

10. (Original) The optical monitoring system of claim 2, further comprising:
a second shutter that prevents incoming deposition material from contacting at least a second portion of the substrate.

11. (Original) The optical monitoring system of claim 2, wherein said first shutter is closed when a predetermined optical thickness on the substrate is reached.

12. (Original) The optical monitoring system of claim 11, wherein a determination is made that a predetermined optical thickness on the substrate is reached using an iterative process that includes a calculation of a predicted optical thickness.

13. (Original) The optical monitoring system of claim 1, wherein said first fiber and said second fiber are comprised of a single fiber, and further comprising a beam splitter coupled to said single fiber.

14. (Currently Amended) A thin film substrate deposition device comprising:
a deposition chamber;

a support [[bridge]] coupled to said deposition chamber;

a first fiber optic collimator coupled to said support [[bridge]];

a first fiber for incoming light coupled to said first collimator;

a second fiber for outgoing light optically coupled to said first fiber optic collimator;

a substrate holder coupled to said deposition chamber; and

a first shutter coupled to said deposition chamber that prevents incoming deposition material from contacting at least a first portion of the substrate.

15. (Original) The thin film substrate deposition device of claim 14, wherein said first fiber optic collimator comprises a two-fiber ferule that is coupled to said first fiber and said second fiber, wherein said second fiber transmits reflected light.

16. (Currently Amended) The thin film substrate deposition device of claim 14, further comprising:

a second fiber optic collimator coupled to said support [[bridge]], wherein said second fiber transmits transmitted light.

17. (Currently Amended) The thin film substrate deposition device of claim 14, further comprising:

a second fiber optic collimator coupled to said support [[bridge]], wherein said second fiber transmits reflected light.

18. (Original) The thin film substrate deposition device of claim 14, wherein said first fiber optic collimator comprises a GRIN lens.

19. (Original) The thin film substrate deposition device of claim 18, wherein said first fiber optic collimator comprises a tap optical filter and an alignment glass rod.

20. (Original) The thin film substrate deposition device of claim 14, wherein the substrate comprises a monitored area that is monitored by collimated light from said first fiber optic collimator.

21. (Currently Amended) The thin film substrate deposition device of claim 14, further comprising:

a strobe signal generator ~~coupled to said support bridge~~.

22. (Original) The thin film substrate deposition device of claim 14, further comprising:

a second shutter that prevents incoming deposition material from contacting at least a second portion of the substrate.

23. (Original) The thin film substrate deposition device of claim 14, wherein said first shutter is closed when a predetermined optical thickness on the substrate is reached.

24. (Original) The thin film substrate deposition device of claim 23, wherein a determination is made that a predetermined optical thickness on the substrate is reached using an iterative process that includes a calculation of a predicted optical thickness.

25. (Original) The thin film substrate deposition device of claim 14, wherein said first fiber and said second fiber are comprised of a single fiber, and further comprising a beam splitter coupled to said single fiber.

26. (Original) A method of optically monitoring thin film deposition on a substrate comprising:

transmitting incoming light through a first optical fiber in a first fiber optic collimator onto a monitored area of the substrate;

receiving reflected and/or transmitted light from the monitored area through a second optical fiber in a second fiber optic collimator;

determining if a desired thin film thickness is reached based on the received light; and

closing a shutter over at least a portion of the substrate if the desired thin film thickness is reached.

27. (Original) The method of claim 26, further comprising:

generating a strobe signal from a mark on the substrate.

28. (Original) The method of claim 26, further comprising:

iteratively determining if the desired thin film thickness is reached by calculating a predicted optical thickness.

29. (New) A method of optically monitoring thin film deposition on a substrate comprising:

transmitting incoming light through a first optical fiber onto a monitored area of the substrate;

receiving reflected and/or transmitted light from the monitored area through a second optical fiber;

determining if a desired thin film thickness is reached based on the received light; and

closing a shutter over at least a portion of the substrate if the desired thin film thickness is reached.

30. (New) The method of claim 29, wherein said determining step is based at least in part on polarized components of the received light.

31. (New) The method of claim 30, wherein said determining step comprises calculating ellipsometric parameters from said polarized components.

32. (New) The method of claim 29, wherein said determining step comprises an iterative process that includes calculating a predicted optical thickness.

33. (New) A deposition chamber having an optical monitoring system therein suitable for monitoring thin film deposition on a substrate, said optical monitoring system comprising:

a first fiber for incoming light coupled to a first fiber optic collimator;

a second fiber for outgoing light optically coupled to said first fiber optic collimator; and

a first shutter movable between:

an open position in which said first shutter permits incoming deposition material to contact at least a first portion of a substrate, and

a closed position in which said first shutter prevents incoming deposition material from contacting said at least a first portion of a substrate.

34. (New) The deposition chamber according to claim 33, further comprising:

a second shutter configured, when in the closed position, to prevent incoming deposition material from contacting at least a second portion of a substrate.

35. (New) The deposition chamber according to claim 34, wherein the first and second portions belong to separate substrates.

36. (New) The deposition chamber according to claim 34, wherein the first and second shutters are autonomously controlled.

37. (New) The deposition chamber according to claim 36, wherein the first and second shutters are connected to a substrate holder within the deposition chamber.

38. (New) The deposition chamber according to claim 37, wherein the first and second shutters are rotated between the open and closed positions by a driver fixed on the substrate holder.

39. (New) The deposition chamber according to claim 33, wherein said first fiber optic collimator comprises a two-fiber ferule, an alignment glass rod, a tap optical filter and a GRIN lens.

40. (New) The deposition chamber according to claim 39, wherein said two-fiber ferule is coupled to said first and second fibers, and wherein said second fiber transmits reflected light.

41. (New) The deposition chamber according to claim 33, further comprising:

a second fiber optic collimator coupled to said second fiber.

42. (New) The deposition chamber according to claim 41, wherein each of said first and second fiber optic collimators comprises a single-fiber ferule and a GRIN lens.

43. (New) The deposition chamber according to claim 41, wherein said second fiber transmits reflected light.

44. (New) The deposition chamber according to claim 41, wherein said second fiber transmits transmitted light.